

CLAIMS

Sub C 1. A method of colour printing which includes the steps of:

(a) printing pixels in swaths of different colours side by side in a repeating pattern in a first relative traverse of a printhead and a surface to be printed, each swath being printed by a respective block of print elements and being wider than a swath printed by a single print element;

(b) relatively indexing the printhead and the surface in a direction other than that of the relative traverse, and

(c) in a further relative traverse printing further swaths which at least partially overprint previously printed swaths in registry therewith, each overprinting swath being of a different colour to the ~~swath~~ <sup>previously printed</sup> which it overprints.

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2. Colour printing apparatus comprising:

a printhead;

means for presenting a surface to the printhead for printing;

means for effecting a relative traverse of the surface and the printhead, the printhead comprising print elements arranged in blocks to print the surface with pixels in swaths of different colours side by side in a repeating pattern during said relative traverse, each swath being wider than that printed by a single print element;

means for relatively indexing the printhead and the surface in a direction other than the direction of relative traverse; and

means for controlling the traversing means, the indexing means and the print elements whereby to effect at least one further relative traverse and to effect said relative indexing between traverses so that ~~the or~~ <sup>each</sup> further traverse at least partially overprints at least one previously printed swath of pixels with a further swath in a different colour in registry therewith.

Sub A2 3. A method or apparatus as claimed in claim 1 or 2 wherein the blocks of elements are arranged in groups, the blocks in each group being adapted for printing in different colours from each other, the array comprising at least two groups, a swath

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A2 printed by a block of one group being at least partially overprinted by a swath printed by a block of another group.

4. A method ~~or apparatus~~ as claimed in claim 3 wherein the groups are of equal width in the array direction.

Sub A3 5. A method or apparatus as claimed in claim 1 or claim 2 wherein the blocks form a repeating pattern of constant pitch.

6. A method or apparatus as claimed in claim 3 or 4 wherein within each group the blocks form a repeating pattern of constant pitch.

7. A method or apparatus as claimed in claim 5 or 6 wherein printing is complete when the printhead and the surface have been relatively indexed through one cycle of the repeating pattern.

8. A method or apparatus as claimed in claim 5, 6 or 7 wherein the blocks of print elements are adapted to print swaths of equal width, and the cyclic pitch of the repeating pattern is an integral multiple of the swath width.

9. A method or apparatus as claimed in any of claims 5 to 8 wherein the swaths are regularly distributed within the cycle of the repeating pattern.

10. A method or apparatus as claimed in any preceding claim wherein each swath of a traverse is contiguous with at least one neighbouring swath of that traverse.

11. A method or apparatus as claimed in any preceding claim wherein the width of the printhead is greater than the width of the surface.

12. A method or apparatus as claimed in claim 11 when dependent from claim 5 or 6 wherein when there are  $n$  said different colours the width of the printhead exceeds that of the surface by  $(n-1)/n$  of a pitch.

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A3  
13. A method or apparatus as claimed in any preceding claim wherein the intensity of printing or overprinting of a pixel is adjusted according to the order of colours in which it has been or will be printed or overprinted whereby the hue of the completed pixel is unaffected by the order in which its constituent colours were printed.

14. A method or apparatus as claimed in any preceding claim wherein the print resolution is increased by overprinting at least one swath with a swath of the same colour having relatively indexed the surface and the printhead so that the overprinting prints pixels interpolated between previously-printed pixels of the same colour.

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15. A method or apparatus as claimed in claim 14 wherein the printhead comprises at least two parallel rows of print elements such that pixels printed by one row are interpolated between pixels printed by the other row or rows.

Sub A4  
16. A method or apparatus as claimed in any preceding claim wherein within each block or group of blocks the print elements are deployed so as to extend at an angle to the indexing direction and reduce the effective spacing of the pixels in the indexing direction.

Sub C2  
17. A colour printhead comprising an elongate array of blocks of print elements extending side by side in an array direction, the printhead being configured for relatively traversing a surface to be printed in other than the array direction, the blocks being arranged to print swaths of different colours side by side in a repeating pattern during said relative traverse, each swath being wider than a swath printed by a single print element, the arrangement of the blocks being such that relative indexing of the printhead and the surface in the array direction permits printing of further swaths at least partially overprinting previously-printed swaths, each overprinting swath being of a different colour to the swath which it overprints and in registry therewith.

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18. A printhead as claimed in claim 17 wherein the blocks of elements are arranged in groups, the blocks in each group being adapted for printing in different colours from each other, the array comprising at least two groups side by side.

19. A printhead as claimed in claim 18 wherein the groups are of equal width in the array direction.

20. A printhead as claimed in claim 17 wherein the blocks form a repeating pattern of constant pitch.

21. A printhead as claimed in claim 18 or 19 wherein within each group the blocks form a repeating pattern of constant pitch.

- ~~22.~~ A printhead as claimed in any of claims 17 to 21 wherein the blocks are contiguous.

23. A printhead as claimed in any of claims 17 to 21 wherein the blocks are evenly spaced.

24. A printhead as claimed in any of claims ~~17~~<sup>20</sup> to 23 wherein there are two parallel arrays alongside each other.

- ~~30~~  
~~25~~. A printhead as claimed in claim ~~24~~<sup>29</sup> wherein the blocks of one array are offset relative to those of the other array so that pixels printed by the blocks of one array are interleaved with pixels printed by the blocks of the other.

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26. A printhead as claimed in claim 17 ~~or any claim dependent therefrom~~ wherein within each block or group of blocks the print elements are deployed so as to extend at an angle to the array direction and reduce the effective spacing of the elements in the array direction.

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